CPMA

COLOR PIGMENTS MANUFACTURERS ASSOCIATION, INC.

201-14993

December 29, 2003

Mr. Mike Leavitt
Administrator
U.S. Environmental Protection Agency
PO Box 1473
Merrifield, VA 22116
Attention: Chemical Right-to Know Program

Re: Submission of Test Plans Pursuant to the High Production Volume Testing Program for Diketene Chemical Abstracts Service ("CAS") No. 674-82-8 Methyl Acetoacetate CAS No.105-45-3, and N,N-Dimethylacetoacetamide ("DMAA"), CAS No. 2044-64-6.

Dear Mr. Leavitt:

I am writing on behalf of the Color Pigments Manufacturers Association, Inc. ("CPMA"). The CPMA is an industry trade association representing color pigment companies in Canada, Mexico, and the United States. CPMA represents small, medium, and large color pigments manufacturers throughout Canada, Mexico and United States, accounting for approximately 95% of the production of color pigments in North America. Color Pigments are widely used in product compositions of all kinds, including paints, inks, plastics, glass, synthetic fibers and ceramics. Color pigment manufacturers located in other countries with sales in Canada, Mexico, and the United States, and suppliers of intermediates to the pigments industry are also members of the Association.

With this letter, we are submitting the enclosed Test Plans for the compounds Diketene, Chemical Abstracts Service ("CAS") No. 674-82-8, and Methyl Acetoacetate ("MAA"), CAS No.105-45-3, and N,N-Dimethylacetoacetamide ("DMAA"), CAS No. 2044-64-6.

The sponsoring companies for these Test Plans are:

Lonza Corporation
Eastman Chemical Corporation

Representatives of these two companies make up the Diketene Dirivatives Task Force within the CPMA. As discussed in our letter of November 30, 1999:

> "CPMA reserves the right to defer review of any chemical under the HPV program where that chemical has been the subject of another commitment to either the EPA-HPV program or other similar programs. CPMA further reserves the right to withdraw from this commitment should the HPV program, when and if finalized, prove to be different from that currently understood by CPMA."

300 North Washington Street, Suite 102 • Alexandria, Virginia 22314 • (703) 684-4044 • FAX: (703) 684-1795
Mailing Address: P.O. Box 20839 • Alexandria, Virginia 22320-1839 • e-mail: cpma@cpma.com

Furthermore, and again as discussed in our letter of November 30, 1999, the CPMA is taking steps to review and categorize the available data for the chemicals sponsored by the CPMA. This effort has required, and will continue to require, considerable time, since many of these products have been produced for over 50 years throughout the world. Additionally, an increasing number of the substances sponsored by the CPMA have become the subject of international efforts under the Organization for Economic Cooperation and Development SIDS program. All testing for such chemicals and structural analogs will be deferred until such time as international SIDS reports are complete.

Therefore, the submission of the enclosed test plans for DMAA, MAA and Diketene does not in any way modify CPMA's previously stated reservations or stated positions with respect to the voluntary HPV program.

All technical questions should be addressed to me at:

Color Pigments Manufacturers Associations, Inc.
Attn: J. Lawrence Robinson, President
Suite 102
300 North Washington Street
Alexandria, Virginia 22314

Telephone: 703/684-4044
Facsimile: 703/684-1795

I will, in turn, forward requests to the appropriate member representatives for review and response. Thank you for your attention in this matter. Please call if there are any questions or comments.

Sincerely,

J. Lawrence Robinson
President

Enclosures

HIGH PRODUCTION VOLUME (HPV) CHALLENGE PROGRAM

TEST PLAN FOR N,N-DIMETHYLACETOACETAMIDE (CAS NO.: 2044-64-6)

201-14993

PREPARED BY:
COLOR PIGMENTS MANUFACTURERS ASSOCIATION, INC.
DIKETENE DERIVATIVES TASK FORCE

December 29, 2003

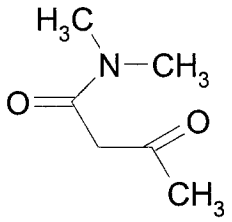
TABLE OF CONTENTS

OVERVIEW

The Diketene Derivatives Task Force (DDTF) of the Color Pigment Manufacturers Association (CPMA) and its member companies hereby submits for review and public comment the test plan for N,N-dimethylacetoacetamide (DMAA; CAS No.: 2044-64-6) under the Environmental Protection Agency's (EPA) High Production Volume (HPV) Challenge Program. It is the intent of the DDTF and its member companies to use existing data, data to be generated, and predictive computer models to adequately fulfill the Screening Information Data Set (SIDS) for the various physicochemical, environmental fate, ecotoxicity test, and human health effects endpoints.

N,N-Dimethylacetoacetamide is a yellow liquid manufactured in closed-systems to a high degree of purity. At the present time, DMAA is utilized solely as a co-promoter in the production of unsaturated polyester resins used in coating materials and as an industrial intermediate in the synthesis of an insecticide.

TEST PLAN SUMMARY

CAS No. 2044-64-6 	Information	OECD Study	Other	Estimation	GLP	Acceptable	New Testing Required
STUDY	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
PHYSICAL-CHEMICAL DATA							
Melting Point	Y	-	-	Y	N	Y	N
Boiling Point	Y	-	-	Y	N	Y	N
Vapor Pressure	Y	-	-	Y	N	Y	N
Partition Coefficient	Y	-	-	Y	N	Y	N
Water Solubility	Y	-	-	Y	N	Y	N
ENVIRONMENTAL FATE ENDPOINTS							
Photodegradation	Y	-	-	Y	N	Y	N
Stability in Water	N	-	-	-	-	-	Y
Biodegradation	Y	N	Y	-	Y	Y	N
Transport between Environmental Compartments (Fugacity)	Y	-	-	Y	N	Y	N
ECOTOXICITY							
Acute Toxicity to Fish	Y	Y	-	-	Y	Y	N
Acute Toxicity to Aquatic Invertebrates	Y	Y	-	-	Y	Y	N
Toxicity to Aquatic Plants	N	-	-	-	-	-	Y
TOXICOLOGICAL DATA							
Acute Toxicity	Y	N	Y	-	N	Y	N
Repeated Dose Toxicity	N	-	-	-	-	-	Y
Genetic Toxicity – Mutation	N	-	-	-	-	-	Y
Genetic Toxicity – Chromosomal Aberrations	N	-	-	-	-	-	Y
Developmental Toxicity	N	-	-	-	-	-	Y
Toxicity to Reproduction	N	-	-	-	-	-	Y

TEST PLAN DESCRIPTION FOR EACH SIDS ENDPOINT

A. Physicochemical

Melting point - A value for this endpoint was obtained using a computer estimation-modeling program within EPIWIN (1).

Boiling Point - A value for this endpoint was obtained using a computer estimation-modeling program within EPIWIN.

Vapor Pressure - A value for this endpoint was obtained using a computer estimation-modeling program within EPIWIN.

Partition Coefficient - A value for this endpoint was obtained using a computer estimation-modeling program within EPIWIN.

Water Solubility - A value for this endpoint was obtained using a computer estimation-modeling program within EPIWIN.

Conclusion: All end points have been satisfied by utilizing data obtained from the various physical chemical data modeling programs within EPIWIN. The results of the various computer estimation models within EPIWIN have been noted by the Agency as acceptable in lieu of actual data or values identified from textbooks. No new testing is required.

B. Environmental Fate

Photodegradation - A value for this endpoint was obtained using AOPWIN, a computer estimation-modeling program within EPIWIN (1).

Stability in Water - No data are available. A new study is needed to complete this endpoint.

Biodegradation - This endpoint was satisfied through the use of a study that is similar to an OECD-301C Modified MITI Test. The study was conducted under GLP assurances.

Fugacity - A value for this endpoint was obtained using the EQC Level III partitioning computer estimation model within EPIWIN.

Conclusion: Except water stability all endpoints have been filled with data utilizing acceptable methodologies and of sufficient quality to fulfill these endpoints. The DDTF proposes to conduct a water hydrolysis study following OECD test guideline 111 to complete the missing endpoint.

C. Ecotoxicity Data

Acute Toxicity to Fish - This endpoint is filled by data from a study that followed OECD TG-203 and was conducted under GLP assurances. The study quality was deemed to be "reliable without restrictions".

Acute Toxicity to Aquatic Invertebrates - This endpoint is filled by data from a study that followed OECD TG-202 and was conducted under GLP assurances. The study quality was deemed to be "reliable without restrictions".

Toxicity to Aquatic Plants - No data are available. A new study is needed to complete this endpoint.

Conclusion: All endpoints, but algal toxicity, have been satisfied with data from studies that were conducted using established OECD guidelines and GLP assurances. In total, these currently available studies are of sufficient quality to conclude that no additional testing is needed for those endpoints. The DDTF proposes to conduct an algal toxicity study following OECD test guideline 201 to complete the missing endpoint.

D. Toxicological Data

Acute Toxicity - This endpoint is filled by oral exposure data from a study completed in 1962 and did not follow an established protocol. Nevertheless, there was sufficient documentation to deem the quality of the study as "reliable with restrictions". This endpoint is filled by data from two studies utilizing two different species with similar results.

Repeat Dose Toxicity - No data are available. A new study is needed to complete this endpoint.

Genetic Toxicity

Mutation - No data are available. A new study is needed to complete this endpoint.

Aberration - No data are available. A new study is needed to complete this endpoint.

Developmental Toxicity - No data are available. A new study is needed to complete this endpoint.

Reproductive Toxicity - No data are available. A new study is needed to complete this endpoint.

Conclusion: Currently only data assessing acute toxicity are available. While these data are somewhat old (1962, pre-GLP) they are nonetheless still believed reliable enough to fulfill this endpoint. All other missing endpoints will be completed through the conduct of new studies. To assess genotoxicity the DDTF proposes to conduct mutation and aberration studies following OECD test guidelines 471 and 473, respectively. To fulfill the missing data needs for the assessment of toxicity following repeated exposure and to understand its potential to induce developmental and reproductive toxicity the task forces is proposing to conduct a study following OECD test guideline 422.

SIDS DATA SUMMARY

Data assessing the various physicochemical properties (melting point, boiling point, vapor pressure, partition coefficient, and water solubility) for DMAA were obtained from estimations using the models within EPIWIN. These data indicate that DMAA is a liquid at room temperature with a low vapor pressure. It has a relatively low estimated octanol to water partition coefficient (K_{ow}= -0.58) and accordingly is very soluble in water (288 g/L).

The assessment of the environmental fate endpoints photodegradation and biodegradation indicate the material is capable of being degraded by photochemical reactions but appears to not be readily degraded using biological processes. Fugacity predictions indicate a very limited amount of partitioning into the air, with 99% estimated to be distributed into the soil and water in roughly equal amounts. Water stability data still need to be generated.

The potential toxicity of DMAA to fish and Daphnia indicate the material is of very low toxicity to these organisms with LC_{50} and EC_{50} concentrations close to 1,000 mg/L. Studies assessing toxicity to algae are being proposed.

The potential to induce toxicity in mammalian species following acute oral exposure is low as the LD_{50} value in both rats and mice was >3,200 mg/kg. Data from the other mammalian toxicity endpoints are still needed.

In conclusion, data that are currently available suggest this chemical likely constitutes a low risk to workers and the environment. Due to its only current known use as an industrial intermediate and no known direct applications

within consumer products, exposure to the general public is not anticipated and exposure to workers is managed through prudent industrial hygiene practices.

EVALUATION OF DATA FOR QUALITY AND ACCEPTABILITY

The collected data were reviewed for quality and acceptability following the general US EPA guidance (2) and the systematic approach described by Klimisch *et al.* (3). These methods include consideration of the reliability, relevance and adequacy of the data in evaluating their usefulness for hazard assessment purposes. This scoring system was only applied to ecotoxicology and human health endpoint studies per EPA recommendation (4). The codification described by Klimisch specifies four categories of reliability for describing data adequacy. These are:

1. Reliable without Restriction: Includes studies or data complying with Good Laboratory Practice (GLP) procedures, or with valid and/or internationally accepted testing guidelines, or in which the test parameters are documented and comparable to these guidelines.

2. Reliable with Restrictions: Includes studies or data in which test parameters are documented but vary slightly from testing guidelines.

3. Not Reliable: Includes studies or data in which there are interferences, or that use non-relevant organisms or exposure routes, or which were carried out using unacceptable methods, or where documentation is insufficient.

4. Not Assignable: Includes studies or data in which insufficient detail is reported to assign a rating, e.g., listed in abstracts or secondary literature.

REFERENCES

1. EPIWIN, Version 3.10, Syracuse Research Corporation, Syracuse, New York.

2. USEPA (1998). 3.4 Guidance for Meeting the SIDS Requirements (The SIDS Guide). Guidance for the HPV Challenge Program. Dated 11/2/98.

3. Klimisch, H.-J., Andreae, M., and Tillmann, U. (1997). A Systematic Approach for Evaluating the Quality of Experimental Toxicological and Ecotoxicological Data. *Regul. Toxicol. Pharmacol.* 25:1-5.

4. USEPA. 1999. Determining the Adequacy of Existing Data. Guidance for the HPV Challenge Program. Draft dated 2/10/99.

I. General Information

201-14993

CAS Number: 2044-64-6
Name: Butanamide, N,N-dimethyl-3-oxo-
N,N-Dimethyl-3-oxobutyramide
Dimethylacetoacetamide
Acetoacetamide, n,n-dimethyl-
N,N-Dimethyl-3-oxobutanamide
N,N-Dimethylacetoacetamide

II. Physical-Chemical Data

A. Melting Point

Test Substance	
Test substance:	N,N-Dimethylacetoacetamide
Remarks:	
Method	
Method:	Estimation
Remarks:	Mean of the Joback, and the Gold and Ogle methods
Results	
Melting point value:	32 °C
Remarks:	
References	MPBPWIN v1.40 in EPIWIN v3.10, Syracuse Research Corporation, Syracuse, New York
Other	

B. Boiling Point

Test Substance	
Test substance:	N,N-Dimethylacetoacetamide
Remarks:	
Method	
Method:	Estimation
Remarks:	Adapted Steinand Brown method
Results	
Boiling point value:	220 °C
Remarks:	
References	MPBPWIN v1.40 in EPIWIN v3.10, Syracuse Research Corporation, Syracuse, New York
Other	

C. Vapor Pressure

Test Substance	
Test substance:	N,N-Dimethylacetoacetamide
Remarks:	
Method	
Method:	Estimation
Remarks:	Modified Grain method
Results	
Vapor pressure value:	0.105 mmHg
Temperature:	25 °C
Remarks:	
References	MPBPWIN v1.40 in EPIWIN v3.10, Syracuse Research Corporation, Syracuse, New York
Other	

D. Partition Coefficient

Test Substance	
Test substance:	N,N-Dimethylacetoacetamide
Remarks:	
Method	
Method:	Estimation
Remarks:	
Results	
Log K_{OW}:	-0.58
Remarks:	
References	KOWIN v1.66 in EPIWIN v3.10, Syracuse Research Corporation, Syracuse, New York
Other	

E. Water Solubility

Test Substance	
Test substance:	N,N-Dimethylacetoacetamide
Remarks:	
Method	
Method:	Estimation
Remarks:	
Results	
Value:	288.1 g/L
Temperature:	25 °C
Description:	Appreciable (100-999 g/L)
Remarks:	
References	WSKOW v1.40 in EPIWIN v3.10, Syracuse Research Corporation, Syracuse, New York
Other	

III. Environmental Fate Endpoints

A. Photodegradation

Test Substance	
Test substance:	N,N-Dimethylacetoacetamide
Remarks:	
Method	
Method:	Estimation
Test type:	Atmospheric oxidation
Remarks:	
Results	
Temperature:	25 °C
Hydroxyl radicals reaction	
OH Rate constant:	16.7426 x 10^{-12} cm^3/molecule-sec
Half-life	0.639 Days (12-hr day; 1.5x10^6 OH/cm^3)
Ozone reaction:	No ozone reaction estimation
Remarks:	
Conclusions	Material is oxidized by hydroxyl radicals in the atmosphere at a rapid rate.
References	AopWin v1.90 in EPIWIN v3.10, Syracuse Research Corporation, Syracuse, New York
Other	

C. Biodegradation

Test Substance	
Test substance:	N,N-dimethylacetoacetamide
Remarks:	Purity was 99.1% (area) by GC/FID, structure confirmed by GC/MS
Method	
Method:	Method C.9., "Degradation, Chemical Oxygen Demand", Official Journal of the European Communities, No. L251/214, 19.9.84
Test type:	Chemical Oxygen Demand (COD)
GLP:	Yes
Year:	1996
Remarks:	
Results	
Results:	0.791 grams COD/gram of test substance
Remarks:	The value is a mean of three replicates.
Conclusions	
Data Quality	
Remarks:	This was a well-documented study that followed established guidelines and was conducted under GLP assurances.
References	Chemical Oxygen Demand of Eastman DMAA; Chemicals Quality Services Division, Eastman Kodak Company, Rochester, NY; HAEL No. 96-0201, April 17, 1996.
Other	

Test Substance	
Test substance:	N,N-dimethylacetoacetamide
Remarks:	Purity was 99.1% (area) by GC/FID, structure confirmed by GC/MS
Method	
Method:	Method C.8., "Degradation, Biochemical Oxygen Demand", Official Journal of the European Communities, No. L251/212, 19.9.84.
Test type:	Biochemical Oxygen Demand (BOD)
GLP:	Yes
Year:	1996
Remarks:	BOD was determined after 5 and 20 days.
Results	
Results:	BOD5 was 0.0069 grams BOD/gram of test substance at 0.020, 0.030, 0.060 percent concentrations BOD20 was 0.011 grams BOD/gram of test substance at 0.020 and 0.030 percent concentrations
Remarks:	QC requirements conformed with method requirements
Conclusions	The test material is not considered to be "Readily Biodegradable" based on a BOD5/COD ratio greater less than 0.5 (0.0069/0.791=0.0087)
Data Quality	
Remarks:	This was a well-documented study that followed established guidelines and was conducted under GLP assurances.
References	Biochemical Oxygen Demand of Eastman DMAA; Chemicals Quality Services Division, Eastman Kodak Company, Rochester, NY; HAEL No. 96-0201, April 17, 1996.
Other	

D. Transport between Environmental Compartments (Fugacity)

Test Substance	
Test substance:	N,N-Dimethylacetoacetamide
Remarks:	
Method	
Test type:	Estimation
Model used:	Level III Fugacity Model; EPIWIN:EQC from Syracuse Research Corporation
Remarks:	
Results	
Model data and results:	Distribution (%)
Estimated distribution	Air 0.00118
and media concentration	Water 45.2
(levels II/III):	Soil 54.7
	Sediment 0.0755
Remarks:	Since no experimental values were available the physical chemical values utilized in this model were default parameters from within EPIWIN.
Conclusions	
References	Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 3.10, Syracuse Research Corporation, Syracuse, New York 13210. The Level III model incorporated into EPIWIN is a Syracuse Research Corporation adaptation of the methodology described by Mackay *et al.* 1996; *Environ. Toxicol. Chem.* **15(9)**, 1618-1626 and 1627-1637.
Other	

IV. Ecotoxicity

A. Acute Toxicity to Fish

Test Substance	
Test substance:	N,N-dimethylacetoacetamide
Remarks:	Purity was 99.1% (area) by GC/FID, structure confirmed by GC/MS
Method	
Method:	OECD 203 and EEC/Annex V C.1.
Test type:	Static
GLP:	Yes
Year:	1997
Species/strain:	Fathead minnow (*Pimephales promelas*)
Analytical monitoring:	Yes; Exposure solutions, temperature, pH, dissolved oxygen
Exposure period:	96-Hour
Remarks:	Juvenile fish of <90 days in age were utilized. Biological loading was kept below 1.0 g wet weight per liter of test solution, with 14 fish used per exposure level (2 replicates of 7 fish).
Results	
Nominal concentration:	1000 mg/L
Measured concentration:	977.74 mg/L
Endpoint value:	96-hour LC_{50} >977.74 mg/L, 96-hour NOEC=977.74 mg/L
Biological observations:	No mortality was observed throughout the 96-hour exposure in the control or test substance
Statistical methods:	NA - No mortality was observed
Remarks:	The tests were performed in glass chromatography jars containing 20 L of exposure solution. Exposure temperature ranged from 19-20 °C, pH ranged from7.6 to 8.3, and dissolved oxygen ranged from 6.1 to 8.9 mg/L. The analyzed mean percent loss of the test substance ranged from 12.7% to 19.5%.
Conclusions	The 96-hour LC_{50} value indicates that the test substance would not be classified according to the European Union's labeling directive and would correspond to a "low concern level" according to the U.S. EPA's assessment criteria.
Data Quality	
Reliability:	Reliable without restrictions
Remarks:	This was a well-documented OECD guideline study conducted under GLP assurances.
References	An Acute Aquatic Effects Test with the Fathead Minnow (*Pimephales promelas*); Environmental Sciences Section, Health and Environment Laboratories, at Eastman Kodak Company, Rochester, NY; Study No. EN-430-909497-A; July 10, 1997.
Other	

B. Acute Toxicity to Aquatic Invertebrates

Test Substance	
Test substance:	N,N-dimethylacetoacetamide
Remarks:	Purity was 99.1% (area) by GC/FID, structure confirmed by GC/MS
Method	
Method:	OECD 202 and EEC/Annex V C.2.
Test type:	Acute immobilization, Static
GLP:	Yes
Year:	1997
Species/strain:	Daphnid (*Daphnia magna*)
Analytical monitoring:	Yes; Exposure solutions, temperature, pH, dissolved oxygen
Exposure period:	48-Hour
Remarks:	The study was conducted in general agreement with OECD test guideline 202 and European Community Annex V, Part C.2.
Results	
Nominal concentration:	1,000 mg/L
Measured concentration:	1,005 mg/L
Endpoint value:	48-hour EC_{50} >1005 mg/L, 48-hour NOEC=1,005 mg/L
Biological observations:	The daphnids in the dilution water controls and test substance exposure solutions exhibited normal behavior and appearance throughout the test and no mortality was observed during the study.
Statistical methods:	NA; No significant differences in immobility were noted between treated and controls.
Remarks:	The test substance exposure concentration was based on the arithmetic average (for replicates A and B) of the geometric means of the test substance analytical results at exposure start (time 0) and the test substance analytical results at exposure end (48-hours). Exposure temperature ranged from 20-21 °C, pH ranged from 8.2 to 8.3, and dissolved oxygen ranged from 8.2 to 8.9 mg/L. The analyzed mean percent gain of the test substance ranged from 21.5% to 24.0%.
Conclusions	The EC_{50} value indicates that the test substance would not be classified according to the European Union's labeling directive and would correspond to a "low concern level" according to the U.S. EPA's assessment criteria.
Data Quality	
Reliability:	Reliable without restrictions
Remarks:	This was a well-documented OECD guideline study conducted under GLP assurances.
References	An Acute Aquatic Effects Limit Test with the Daphnid (*Daphnia magna*); Environmental Sciences Section, Health and Environment Laboratories, at Eastman Kodak Company, Rochester, NY; Study No. EN-431-909497-A, September 18, 1997
Other	

V. Toxicological Data

A. Acute Toxicity

Test Substance	
Test substance:	N,N-Dimethylacetoacetamide
Remarks:	Purity was unknown
Method	
Method:	Acute lethality; Other
Test type:	LD_{50} estimate
GLP:	No (Pre-GLP)
Year:	1962
Species/strain:	Rat/unknown
Route of exposure:	Oral gavage
Dose levels:	200, 400, 800, 1,600 and 3,200 mg/kg
Remarks:	The report indicated that there were 10 animals used. It is assumed there were 2 rats/dose level administered.
Results	
Value:	LD_{50} = >3,200 mg/kg.
Deaths at each dose:	No mortalities were noted.
Remarks:	Animals were noted as appearing quite weak with vasodilatation. A gain in weight was reported after the 2-week study observation period was complete.
Conclusions	Material would be considered as slightly toxic.
Data Quality	
Reliability:	Reliable with restrictions
Remarks:	The study was conducted quite some time ago and hence many study details are missing from the report and not available. However, basic data are given and results indicate the material is not acutely toxic.
References	Toxicity Report, Laboratory of Industrial Medicine, Eastman Kodak Company, Rochester, NY. 9-14-62.
Other	

Test Substance	
Test substance:	N,N-Dimethylacetoacetamide
Remarks:	Purity was unknown
Method	
Method:	Acute lethality; Other
Test type:	LD_{50} estimate
GLP:	No (Pre-GLP)
Year:	1962
Species/strain:	Mouse/unknown
Route of exposure:	Oral gavage
Dose levels:	200, 400, 800, 1,600 and 3,200 mg/kg
Remarks:	The report indicated that there were 10 animals used. It is assumed there were 2 mice/dose level administered.
Results	
Value:	LD_{50} = >3,200 mg/kg.
Deaths at each dose:	No mortalities were noted.
Remarks:	Animals were noted as appearing slight to moderate weakness with a rough coat. A gain in weight was reported after the 2-week study observation period was complete.
Conclusions	Material would be considered as slightly toxic.
Data Quality	
Reliability:	Reliable with restrictions
Remarks:	The study was conducted quite some time ago and hence many study details are missing from the report and not available. However, basic data are given and results indicate the material is not acutely toxic.
References	Toxicity Report, Laboratory of Industrial Medicine, Eastman Kodak Company, Rochester, NY. 9-14-62.
Other	